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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/939,641

08/28/2001

Sakae Nishijima

KP-9057

4534

466

7590

11/18/2003

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EXAMINER

MILLER, CRAIG S

ART UNIT

PAPER NUMBER

2857

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,641

Applicant(s)

Nishijima

Examiner

Carol Steen M. Her

Group Art Unit

2857

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on amendment filed 25 August 2001

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-11 is/are pending in the application.

Of the above claim(s) is/are withdrawn from consideration.

☒ Claim(s) 5-11 is/are allowed.

☒ Claim(s) 1 is/are rejected.

☒ Claim(s) 2-4 is/are objected to.

☐ Claim(s) are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some* ☐ None of the:

☒ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

1. The following is a quotation of 35 U.S.C. § 103(b) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

2. Claims 1 are rejected under 35 U.S.C. § 103(b) as being unpatentable over Flaherty (5,975,747).

Flaherty discloses a feed means [101], feed rate detector [103], stopping means [107], integrated controller, calculating means [200], calculating a predicted overflow amount using measured flow rate and a predetermined ratio [611], calculating the total fed amount by summing incremental products of measured flow rate and incremental sample time, and sensing a close valve signal when the sum of the total fed amount and predicted overflow amount is greater than or equal to the target amount (Total Flow + Predicted Overflow = Intended Flow) [613]. Flaherty also discloses in col. 1 that it is known to, "...*deliver 100 gallons and if experience shows that an overflow of 1 gallon occurs if the controlling valve is shut off when the 100 gallon receptacle is filled, it is then relatively easy to compensate for this by sending a signal to close the valve when 99 gallons have been delivered so that the 99 delivered gallons plus the predicted 1 gallon of overflow totals the desired 100 gallons to be delivered.*" (Signal valve closing when Delivered = Intended - Preset Overflow). Flaherty does not specify that the close valve signal should be sent when total fed amount equals the difference between the intended flow rate and preset amount (signal when Total Flow = Intended Flow - Preset Amount) or specifically that the preset amount should be calculated as a function of the flow rate and delay time. With respect to the close signal, the Examiner notes [613] (Total Flow + Predicted Overflow = Intended Flow), and that if one subtracts the preset amount from both sides of the equation, one arrives at that which is instantly claimed. Therefore, Flaherty would suggest to one of ordinary skill in the art at the time the invention was made that the close valve signal should be sent when total fed amount equals the difference between the intended flow rate and preset amount as claimed. With respect to the preset amount, within the specification, the Applicant defines the delay as the, "...*time from generating a signal for working the stopping means to stopping the feeding completely.*..." (page 3 lines 16+). Flaherty

discloses in col. 3 that a RATIO should be determined which, "...is derived by dividing the overflow amount by the flow rate..." The Examiner notes that in the case of Flaherty, the ratio has an associated unit of measure, specifically, $\frac{\text{Volume}}{\text{FlowRate}(\frac{\text{Volume}}{\text{Time}})} = \text{Time}$ (col. 3 lines 19-21). Flaherty uses this ratio in fig. 6 [611] to determine a predicted overflow amount as a function of measured flow rate and predetermined ratio time. While this ratio is not a time measure of valve closing delay, in view of the calculation of this ratio as found in fig. 5 [505], it can only be deemed by one of ordinary skill in the art as an averaged *effective* delay. Such effective measurements (linear approximations) are common in the mathematical world of the art of Physics in modeling complex physical phenomenon. The effective delay time of Flaherty therefore inherently includes correction for those chaotic and complex portions of the flow immediately following the initiation of the valve closing and those final portions of the flow just before all flow ceases. The Examiner notes that it is known to eliminate an element and its associated function, In re Karlson, 136 USPQ 184 (CCPA 1963), In re Nelson, 40 CCPA 708, 198 F.2d 837, 95 USPQ 82; In re Eliot, 22 CCPA 1088, 76 F.2d 309, 25 USPQ 111, In re Wilson, 153 USPQ 740 (CCPA 1967), "*It is well settled, however, that omission of an element and its function in a combination is an obvious expedient if the remaining elements perform the same functions as before.*" and, "...subject matter is not patentable in absence of showing of unexpected result flowing from such omission." In the case of Flaherty, it would have been obvious to one of ordinary skill in the art at the time the invention was made that if one were not interested in the inherent correcting function of dividing the overflow volume by the rate, one would clearly be limited to measuring the valve closing delay time directly. Therefore, should one decide for reasons of simplicity of calculation that the correcting function of Flaherty should be omitted, that it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute direct valve flow delay measurement for the disclosed effective delay ratio, each performing similar functions in similar ways, absent a showing of unexpected results or synergistic results from any particular claimed combination.

3. Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim(s) or if said rejection(s) were overcome.

4. Claims 5-11 are allowable over the prior art of record because while the prior art of record does disclose switching to a lower flow rate at a predetermined flow amount before reaching a target total flow amount, they fail to disclose or suggest that the flow rate should be reduced at a predetermined flow amount prior to reaching a target total flow amount.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

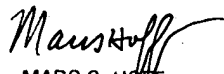
Rider (4,200,203) discloses flow pulse train counting and prediction to obtain accurate total flow.
Miura (4,572,405) discloses small dispensing spurts after approaching a target total flow amount.
Lamoureux *et al.* (5,249,129) discloses non-target events for slowing flow in fluid delivery.
Tulley *et al.* (5,431,302) discloses stopping flow when delivered flow is equal to target volume minus predicted overflow.
Skupin *et al.* (6,097,993) discloses overflow prediction.
Neelay *et al.* (6,173,214 B1) discloses flow metering with primary and secondary amount restraints.
Hansen (6,499,517) discloses batch fluid dispensing and particularly considers complex post valve closure signal flow characteristics (figure 2).

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Craig Steven Miller whose telephone number is (703) 305-9730. Art Unit facsimile services are now available at (703) 308-7722.

The Examiner can normally be reached on Mondays through Fridays from 07:30am-4:00pm EST. Should repeated attempts to reach the Examiner be unsuccessful, the Examiner's Supervisor, Marc Hoff may be reached at (703) 308-1677.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Craig Steven Miller (ss)
06 November 2003


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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